Interest reduction in England

Ec 764
April 22, 2024

Issues

- Development of financial market in England

- Contrast between England and France

- England
    - All debt before 1750 was redeemable at par
    - Loans during the Seven Years war (1756-1763) had a fixed term
    - Loans during the American war were redeemable again

- Today: we focus on two events
    - 1737: failure
    - 1749: success

- France
    - redeemable debt was used under Louis XIV
    - Colbert managed a successful reduction of the interest rate in the 1680's
    - Law experience
    - Not one redeemable bond in the 18th century, all life-time annuities (like retirement account) and loans with fixed time of reimbursement

In the 30's most of the debt is at 4% or higher

The following is the State of the National Debt, as it stood December 31, 1739, immediately on the Entrance into a new War.

	Principal.				Interest.		
	£	s.	d.		£	s.	d.
The capital of the Bank of England, at 6 per cent.	1,600,000	0	0	. . . . .	96,000	0	0
For cancelling exchequer-bills, at 4 per cent.	500,000	0	0	. . . . . .	20,000	0	0
Purchased of the South-Sea Company, at 4 per cent.	4,000,000	0	0	. . . . . .	160,000	0	0
Annuities, at 4 per cent. from Midsummer, 1728	1,750,000	0	0	. . . . .	70,000	0	0
Annuities, at 4 per cent. from Midsummer, 1729	1,250,000	0	0	. . . . .	50,000	0	0
The capital of the East-India Company, at 4 per cent.	3,200,000	0	0	. . . . .	128,000	0	0
South-Sea Stock and Annuities, at 4 per cent.	27,302,203	5	6½	. . . . . .	1,092,088	2	7½
Various long and short annuities, exchequer-bills, &c.	6,527,735	2	4	. . . . . .	314,949	19	8
Navy and victualling debt, at 4 per cent.	824,684	15	6	. . . . .	32,987	7	9¾
£	46,954,623	3	4½	. . . . . .	1,964,025	10	1¼

		£	s.	d.
Debt on December 31, 1727		53,019,155	17	5¼
Ditto, 1739		46,954,623	3	4½
	£	6,064,532	14	0¾

Source: Grellier (1810)

3

Possible financial policies

- Fixed term loans of 10, 20, 30 years or life-time annuities

  – Method in France: very expensive since the terms of the loans are set during the war when the interest rate is high

- During the war, issue short-term debt and refinance after the war (when the interest rate has fallen again)

  – Some have alleged that this was the method in England

  – No data that this **refinancing** took place (a little more after 1783)

- Policy actually followed: issue long-term debt that is **redeemable**

  – The government (borrower) can buy back the bond (annuity) at the **face value**, is at "par", usually 100.

  – To buy back old loans, the government would need to issue new loans (at the current interest rate that would be lower)

Overall view

- Let p be the price of a perpetual annuity (consol) with payment (coupon) c per year

- Long-term interest rate R

- Then: $p = c / R$

During the war, the price of the consol falls :
the interest rate rises

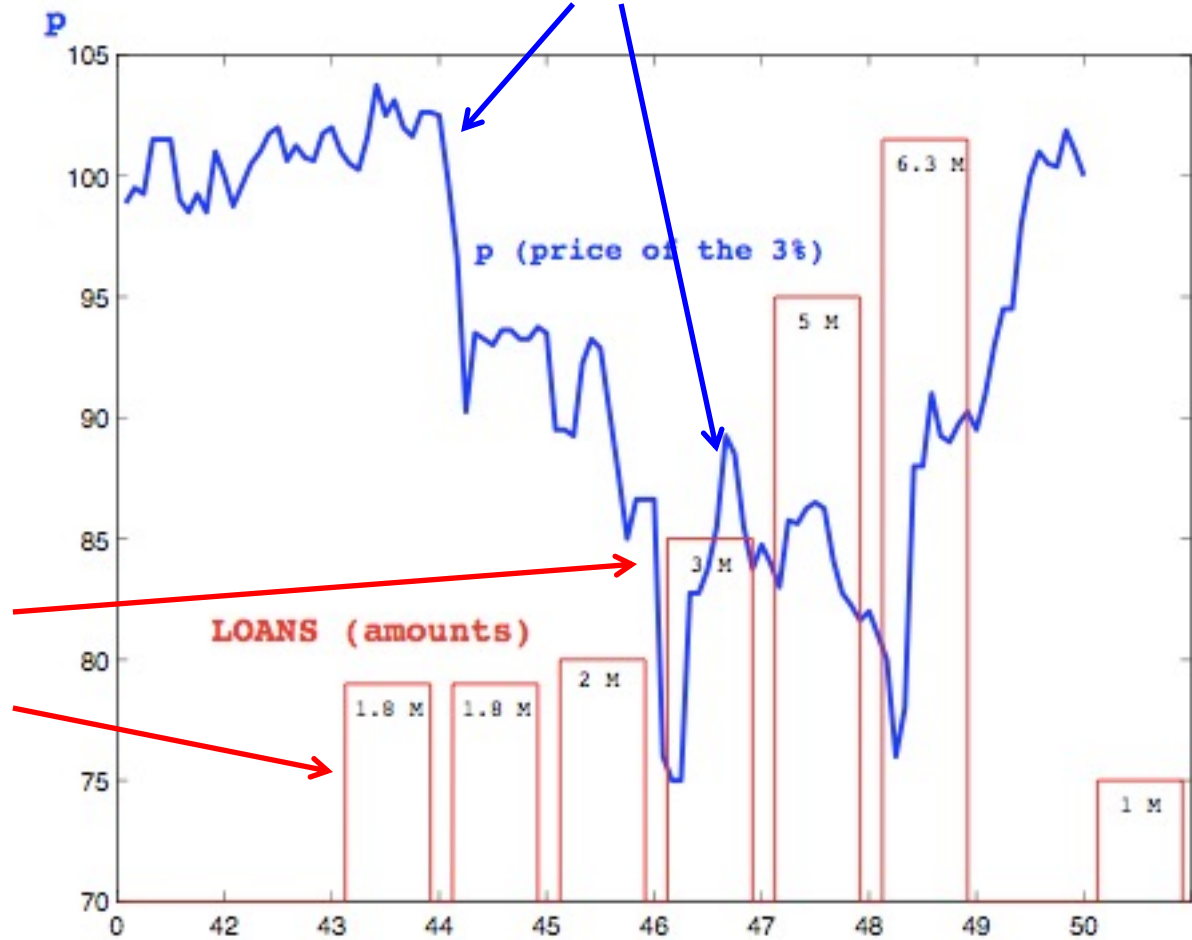Borrowing is high when its cost (the interest rate) is also high

Figure 1: Prices of the 3 % bond (1741 - 1749)

In the 30's most of the debt is at 4% or higher

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Purchased of the South-Sea Company, at 4 per cent	4,000,000	0	0	. . . . . .	160,000	0	0
Annuities, at 4 per cent. from Midsummer, 1728	1,750,000	0	0	. . . . .	70,000	0	0
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	£ 6,064,532	14	0¾

Source: Grellier (1810)

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Policy discussion

- Loans are expensive to issue

- If the 3 percent is at par, paying back 4 percent bond by a new loan at 3 percent is the same as reducing the rate of interest on the bonds from 4 to 3 percent.

- Not exactly the terms of the loans; hence some bargaining from the bond holders who would like to extract the benefit from saving on the fixed cost of a new loan.

- If the 3 percent falls back to say, 90, the intererest reduction cannot be done, (may be at 3.5 percent, but this is half measure and not worth the trouble perhaps). To give some insurance against a fall of the the 3 percent when the reduction is actually implemented, some additional premium (phased in interest reduction)

- Standard arguments of the widows, etc..

- More interesting: government wants to avoid inside trading)

- Previous shows that: price of the 3 percent must be stable at the time of the call

Course of the exchange

The Course of the EXCHANGE, &c.

LONDON, TUESDAY, March 29. 1737.

Amsterdam	35 3 2½ Uf.
Ditto at Sight	35 ¼ 2½ Uf. a2 Uf.
Rotterdam	35 4 2½ Uf.
Antwerp	35 5 a6
Hamburgh	34 3 2½ Uf.
Paris	32 ½
Bourdeaux ½ Ufance	31 ⅞
Cadiz	41 ⅛
Madrid	42 a ⅛
Bilboa	41 ⅝
Leghorn	50
Genoua	53 ⅛ a 53
Venice	50 ⅞ a I
Lisbon	5 s. 6 da ⅛
Porto	5 s. 5 d ¾
Dublin	10 ½

Cocheneal, 16 s. per ℔. a ½ per Cent. Premium.

Gold in Coin, 3 l. 18 s. 2 da 3 d
Ditto in Bars, 3 l. 18 s. 1 da 2 d
Pillar Pcs of Eight, 5 s. 3 d ⅞
Ditto Small, —— 5 s. 3 da ⅛
Mexico, —— 5 s. 3 d ⅞
Ditto Small, —— 5 s. 3 da ⅛
Silver in Bars Standard, 5 s. 4 da ¼

} per Ounce.

	Saturday,	Monday,	Tuesday.
Bank Stock	Nothing done	147¼ a7 a7¼	142½
East-India	Nothing done	Nothing done	178 177
South-Sea	103 102¾	103 103¼ 103	101½ 98½ 99½
Ditto Annuity	111⅜	112 a11⅞ a12	110 107 a¼
Ditto New	110⅞ 11⅛ 111	111 111⅝ ⅜	109 106¾ a7
per Ct. Ann. 1726	106½ a¾	106½	Nothing done
Ditto, 1731	106½ a¾	106½	Nothing done
Million Bank	120	120	120
Equivalent	115	115	115
African	14	14	14
Roy. Aff. 100 l. pd. in	109½ a¾	109¾	109¾
Lond. Aff. 13 l. pd. in	15	15	15
Emperor's Loan	116½	116½	Nothing done
Bank Circulation	2 l. 10 s.	2 l. 10 s.	2 l. 10 s. præ.

Transfer Books Open
Bank Stock —— 15th April
Southsea Old Ann. 28th ditto
Million Bank —— 20th ditto
London Affurance 21st ditto
The above Stocks with their Dividends, fell as above for their

Pay the Dividend
18th April 2¾ per Cent.
20th ditto 2 per Cent.
20th ditto 2 per Cent.

8

Prices Consols and Bonds 1746- 1750

- Assumptions
  - 3 percent is perpetual
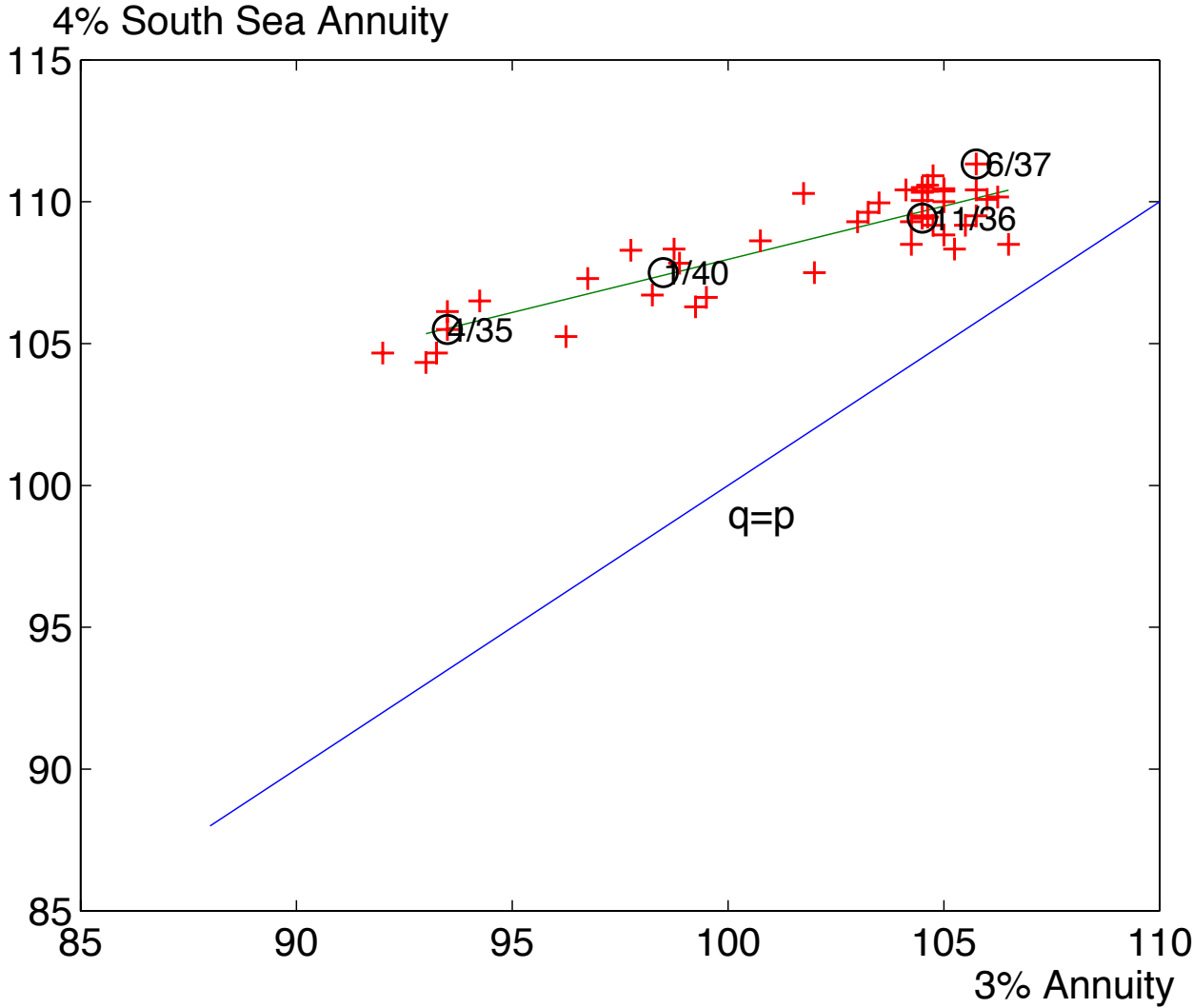 - 4 percent is callable

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Source: Grellier (1810)

The mid-thirties:

The proposal of Barnard

tures, at 3l. per cent. per ann. - - - - - -	37,821	5	1¼
Annuities, at 3l. 10s. per cent. anno 1731 - -,-	400,000	0	0
Exchequer-Bills on the Victuallers Act, anno 1726, at 3l. per cent per ann. - - - - - -	481,400	0	0
Ditto, made out for interest on Old Bills exchanged	2,200	0	0
Duties on Salt continued, anno 1734, at 4l. per cent. per ann. - - - - -	780,000	0	0
Ditto, anno 1735, at ditto	500,000	0	0
Annuities, anno 1736 at 3l. per cent. per annum, charged on the Sinking-Fund - - - - -	600,000	0	0

Note, The Land-Taxes and Duties on Malt, being annual Grants, are not charged in this Account, nor the 1,000,000l. charged on the deductions of 6d. per Pound.

East-India Company.

By Two Acts of Parliament 9 Will. 3, and Two other Acts 6 et 10 Annæ, the Annuity granted by the said Acts was, by an Act 3 Geo. 2, reduced from 5l. per cent. per annum - - - - -	3,200,000	0	0

Bank of England.

On their original Fund, at 6l. per cent. per annum	1,600,000	0	0
For Exchequer-Bills cancelled, anno 3 Geo. 1, at 4l. per cent. per annum	1,500,000	0	0
Purchased of the South-Sea Company, at ditto	4,000,000	0	0
Annuities charged on the Duties on Coals, since Lady-day 1719, at ditto	1,750,000	0	0
Ditto, on the Surplus of the Funds for Lottery 1714, at ditto - - -	1,250,000	0	0
Annuities for the Lottery 1731, at 3l. per cent. transferrable at the Bank	800,000	0	0

South-Sea Company.

On their capital Stock, and Annuities, per Act 9 Geo. 1, at 4l. per cent per annum - - - - -	28,302,203	5	6¼
	£. 47,855,948	3	3¼

March 21. The House having resolved itself into a Committee of the whole House, to consider of the National Debt; and the above State of the National Debt having been referred to the said Committee, as soon as sir Charles Turner had taken the chair,

Sir *John Barnard* stood up and made a motion, for enabling his Majesty to raise money either by the sale of Annuities for years or lives, at such rates as should be prescribed, or by borrowing at an interest not exceeding 3 per cent. to be applied towards redeeming of the Old and New South-Sea Annuities; and that such of the said Annuitants as should be inclined to subscribe their respective annuities, should be preferred to all others.*

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* "March 21. The House resolved into a committee of supply, and sir John Barnard brought forward his Scheme. It was called, "A Proposal towards lowering the Interest of all the Redeemable Debts to 3 per cent. and thereby to enable the parliament to give immediate ease to his Majesty's subjects, by taking off some of the taxes which are most burthensome to the poor, and especially to the manufacturers, as likewise to give ease to the people, by lessening the annual taxes for the current service of the year," and was as follows: "That an offer be made to the proprietors of the South Sea Annuities, as well old as new, at such times as the respective transfer books shall be shut, in the following manner; viz. That all persons be at liberty to make their option for the whole, or any part of their capital of one or more of the particulars undermentioned, for which books be laid open at the South Sea house, for so long time as shall be thought proper; viz. All who desire to be paid their money, to enter their names and sums in one book. Those who shall chuse to have annuities for certain terms of years, and the capital to be annihilated, may subscribe in particular books for that purpose, at the following rates:

"For 47 Years at 4 per Cent. per Ann.
31 Years at 5
23¼ Years at 6
19 Years at 7
16 Years at 8
13¼ Years at 9
12 Years at 10

"That the proprietors of so much of the capital, as shall not be claimed in money, nor subscribed into some of the Annuities for terms of years, shall, for the future, be intitled to an annuity of 3 per cent. per annum only. And for the encouragement of the annuitants to accept of 3 per cent. per annum, it is proposed, that they be not subject to redemption or diminution of their annuities for the term of 14 years. And that all the Annuities for terms of years be transferable at the South Sea house, without any charge; as well as the Annuities which shall be continued at 3 per cent. per annum. And that all the Annuities for terms of years, commence from the determination of the Annuities of 4 per cent. without any loss of

The proposal of Barnard

1. The conversion of the annuity in cash at par.

2. The exchange for a 3% annuity, non redeemable for 14 years

3. The exchange for a fixed term annuity as described in the first two columns of Table 2.

4. For owners of at least 44 years of age, the exchange for a life annuity as described in the last column of Table 2. For example, the life annuity pays 8% for a person of age 53.

t was a tough plan. The provisions 3 and 4 addressed the usual concerns about

Evaluation of the proposal

$$Q = (c-3) \sum_{k=1}^{n} (1+r)^{n-k}$$

Equivalent to the present discount value of the coupon = the present discount value of 3.

$$c \sum_{1}^{n} \frac{1}{(1+r)^k} = 3 \sum_{1}^{n} \frac{1}{(1+r)^k} + \frac{Q}{(1+r)^n}.$$

Take r = 3%

1. Choose c

2. For any value of the maturity n, the formula gives Q

3. Choose **n** (up to a quarter) that produces the Q closest to 100

Table 2: Annuities in the Barnard proposal

1	2	3	4	5	6
Coupon	Term (years)	Equivalent redemption	Value with discount 2.7%	IRR (%) at price 110	Life (age)
4	47	100.3965	105.7950	2.5	
5	31	100.0054	104.1036	2.3	
6	23.5	100.2972	103.4043	2.13	
7	19	100.4675	102.9820	1.98	44
8	16	100.7844	102.8328	1.84	53
9	13.75	100.2907	102.2412	1.64	59
10	12	99.3442	101.3464	1.37	63

Source : History of British Parliament.
For descriptions of computation, see the text.

Impact
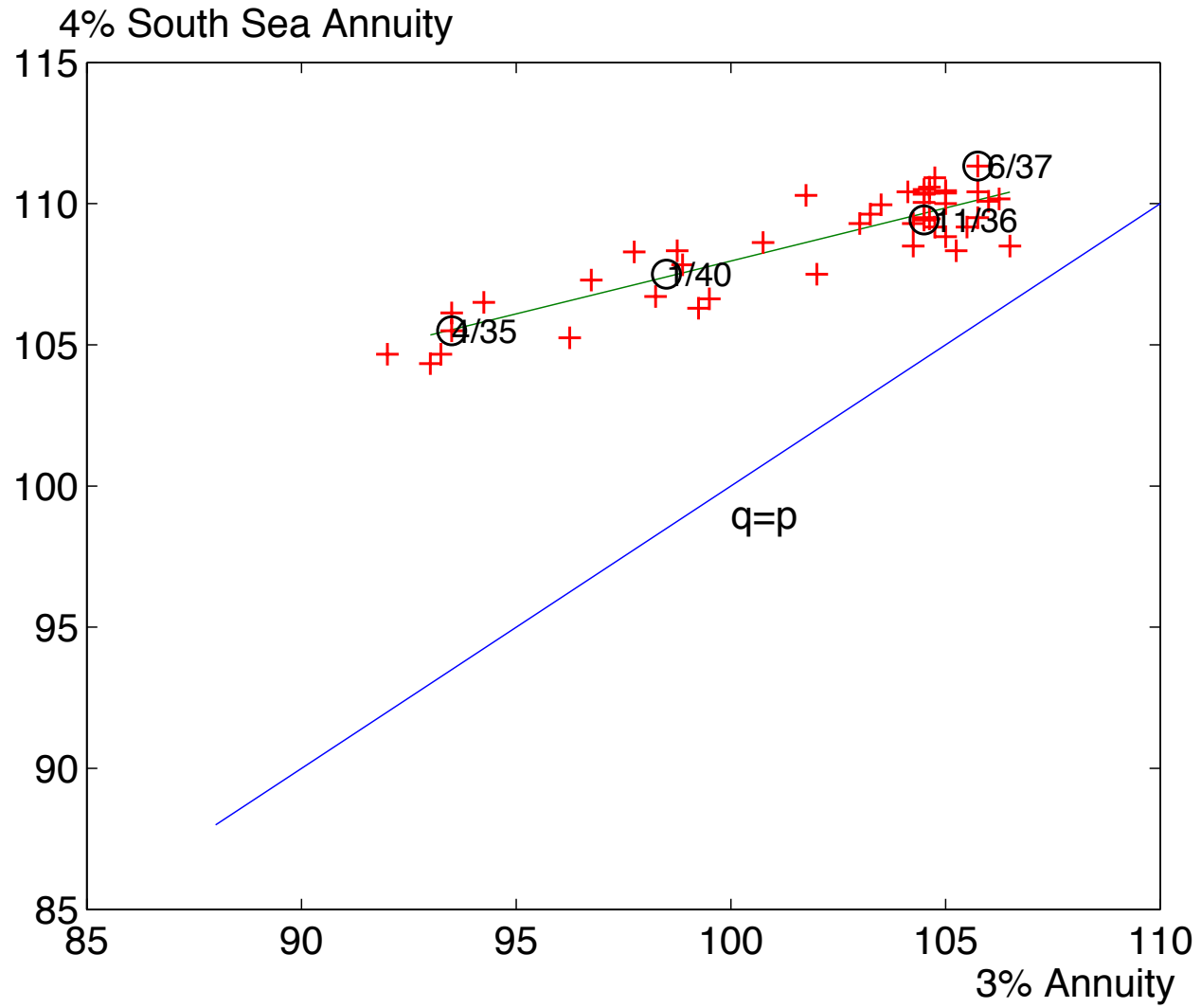
The market was not prepared

Two shocks

(i). Barnard's presentation

$q - p + 100$

P

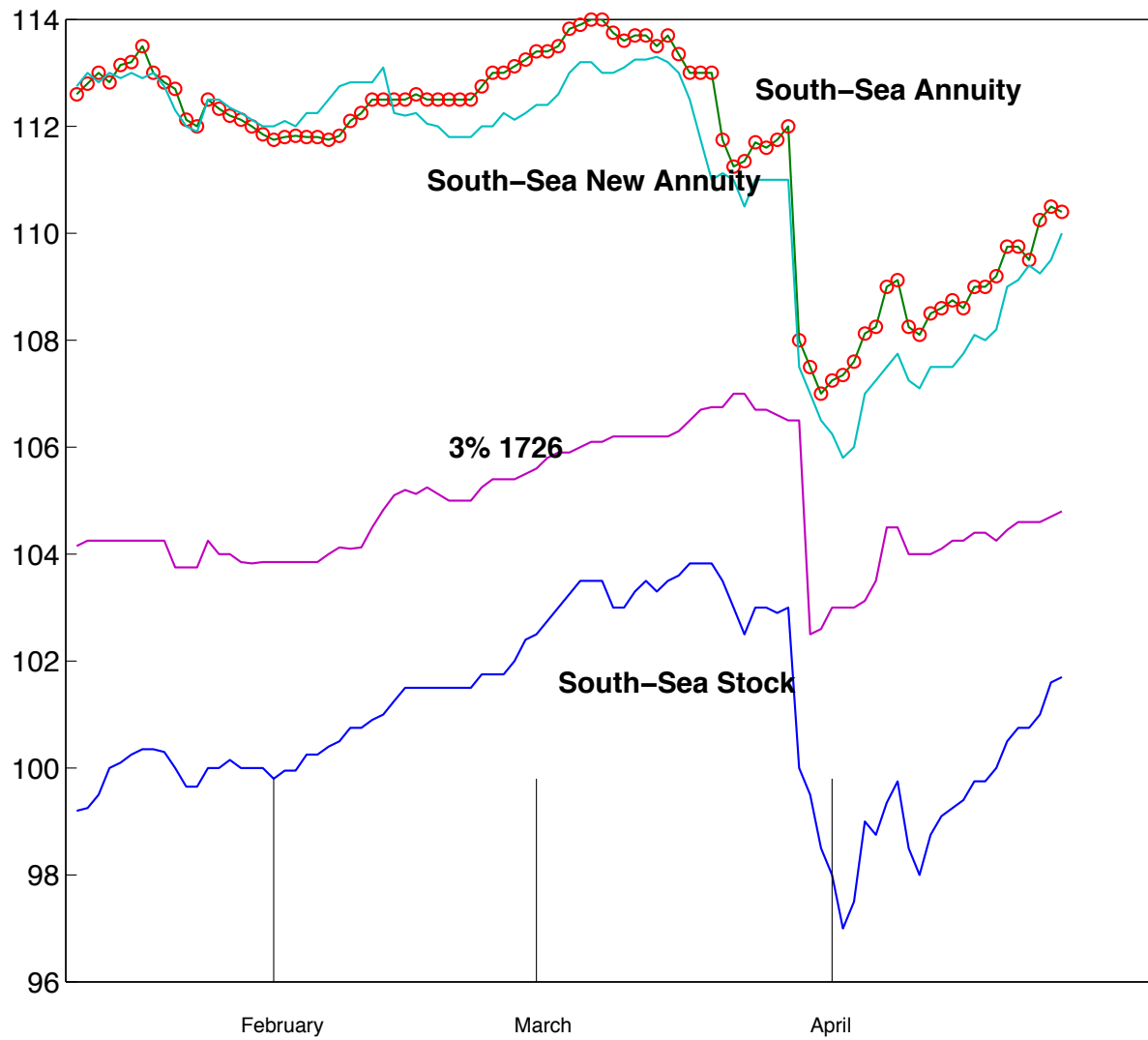(ii). March 29
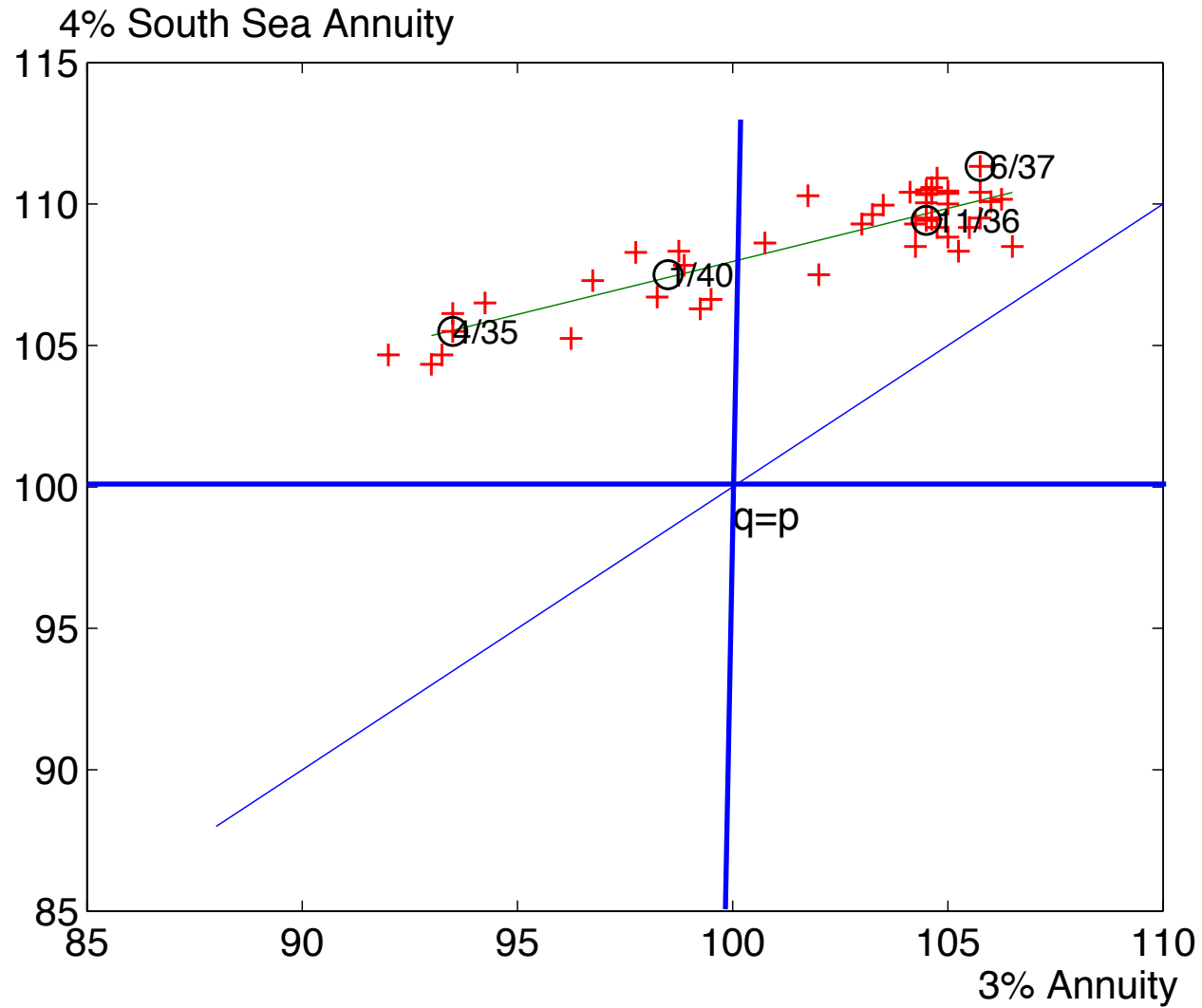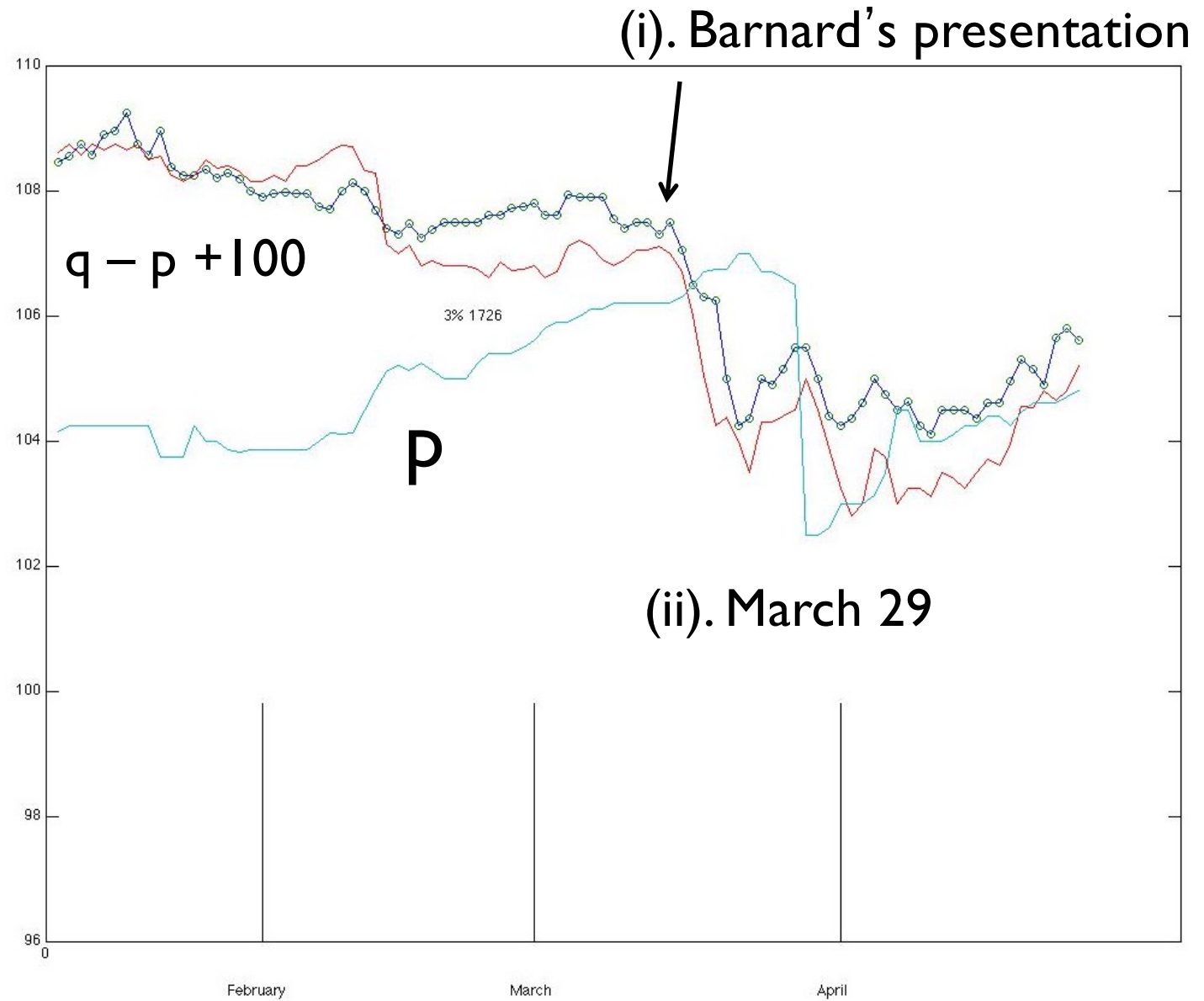
Figure 7: Prices around March 1737

The interest reduction in the Fall of 49

- Prices of 3% at par for a while (see previous figure)

EACH DAYS. Price of STOCKS in AUGUST, 1749.

Days	Bank Stock	E.-India	South Sea	South Sea Annu. old	South Sea Ann. new	Bank Ann 1746	Bank Ann 1747	Bank Ann 1748-9	Lottery 1747	3 per Cent. Annu.	India Bon. præm.	B. Cir. præ l. s. d.	Wind at Deal	Baro- meter	Days	July
29	137	185½	116	108¼	106⅛a½		106⅛	106⅛	105½	100⅝	81s a 82	5 12 6	S.W.	29,9	27 29	Males
30	Sunday												N.byW.	29,9	37 30	Females
31	137½a½	186		108¼a½	106½	105½	106½	106⅛a½a½		100½a½	85s a 84	5 12 6	S.W.	29,85	37 31	
1	137½a⅝	185½a½		108	106½	105½	106½	106½		100½a½	84s a 83	Do	South	29,75	42 1	Males
2	137½a737	185		108a⅜	106½a½	105½	106½a⅜	106½a⅜		100½	83s a 84	Do	N.E.	29,5	39 2	Females
3	137	185	115	108¼	106⅛a½	105¼a5a½		106⅜a6	105	100½a½	84s a 85	Do	N.W.	29,65	37 3	Under
4		185a184½	115	108½a½	106⅜a½	105½	106⅛	106a⅜	105a½	100⅝a½	84s a 83	Do	S.W.bW.	29,65	37 4	Between
5		185			106½	105⅛	106½a½	106⅛		100¼	84s a 85	Do	S.W.	30	37 5	
6	Sunday												S.W.	29,9	6	
7	137½a½a½	185a½a185	113½	108a½	105½a5	105½a5		106½a6	105½	100½a100	84s a 85	Do	W.S.W.	29,95	35 7	
8	137⅞	185½	113½	108½	105	105	106	106a½	105½	100⅜a100	84s a 85	Do	West	30,0	35 8	
9	137½a⅝	184½a½a½	113½	108½a7⅞	106⅛a½		106a⅛	106	105	100½	84s a 83	Do	S.W.	30	29 9	
10	137½a½a⅜	186a186	113½a⅜	107⅞	106½a½a⅛	104⅞a5		105⅞a6		100	84s a 81	Do	S.W.	29,95	32 10	
11	137½	186a87	114	108	106½	105	106	106	105	100½	83s a 84	Do	North	29,95	37 11	
12			114½	108	106½	105½	106½a½	106½	105	100½a½	66s a 72	Do	E.S.E.	30,05	37 12	
13	Sunday												S.W.		13	
14	137½a133	190½	115a½	107⅞a8	106½	105		106½a5⅞		100a½	60s a 63	Do	N.N.W.	29,9	39 14	
15	138½	190½	115¼	108	106½	105	106	106	105	100½a100	57s a 62	Do	North	30,2	39 15	
16	138½a139½	190½a190	115	107½	106½a106	105		100	106½a6	100½a100	63s a 61	Do	S.W.	30,2	37 16	
17	139a138½	189½	115½	107½	106a½	104½a½		105½a½a6		100a99⅞	62s a 61	Do	S.S.W.	30,15	37 17	
18	138a138½	190½	115⅝	108		105	106½⅛	106a⅜	105	100	60s a 61	Do	S.byE.	30,1	37 18	
19	139				106½a½	105	106	106		100½a½	62s a 60	Do	N.E. byE	30,2	33 19	Within
20	Sunday												N.E.		20	Without
21	138½a139		115½	107½a⅞	106½a½	105	106	106		100⅝	61s a 59	Do	E.N.E.	30,15	26 21	In Mi
22	138½	100½		107½	106½	104⅞	105⅞	105⅞	104⅞	100⅛	56s a 58	Do	E.N.E.	30	26 22	City &
23	139	190a189½		107½a8		104⅝	106	105⅞		100⅝	58s a 60	5 17 6	S.W.	30	28 23	
24	139			108a½		104½	105½	105½a⅝		100½a100	59s	5 17 6	S.byE.	30,15	34 24	Week
25	139½	189½		108	106½	104⅞	105⅞a6	105⅞a6	104⅞a5	100⅛	58s a 59	Do	N.E.by N	30,15	33 25	
26	140a140	190a189½			106½a⅜	105	106	106		100⅛	59s a 60	Do	N.E.	30,15	3 26	
27	Sunday												N.E.	30,1	3	
28	140a141	184a⅜	115½	107⅞a8		104⅞	106	106		100⅛	58s a 59	Do	N.E.	30,1	28	

Price of corn	Be---Key.	Bafingstoke.	Reading.	Farnham.	Henley.	Guildford.	Warminster	Devizes.	Gloucester.	Northampt
Wheat	26s to 30s qu	7l. 19s load	8l 17s load	8l 15s load	8l 15s load	8l 0s load	28s to 34 qu	30s to 35 qu	4s 8d. bush.	24s to 26qu	Whea
Barley	15s to 17	16s to 17 qr	0 s to 00 qr	17s to 20 qr	00s to 00 qr		17s to 20	17s to 21	2s 2d	16s to 17	Hops
Oats	12s to 15s 0d	15s to 18 6d.	18s to 20	18s to 22s	17s to 19	15s to 18 0d	16s to 19	15s to 20	2s to 2s 4d	13s to 15	Hay
Beans	16s to 19s 0d	24s to 25 6d	20s to 25	25s to 28	20s to 25	28s to 30	28s to 30	24s to 28	2s 6d to 33	18s to 21	Coals

Debt instruments

Table 1: New loans 1743-1750

1	2	3	4	5	6	7	8
Date	Amount $\mathcal{L}$ M	Instruments	Rate (%)	Yield (%)	*Ex post* rate	Market prices	Remarks
1743	1.8	100(3%)	3.42	3.42	3.42	3%: 100	1M by subscription, 0.8M by lottery.
1744	1.8	100(3%)	3.33	3.33	3.33	3%: 93	1.2M by subscription, 0.6M by lottery, premium of 3%.
1745	2.0	100(3%), L(1.125)	4.02	4.02	4.02	3%: 89	1.5 M. subscription, 0.5 M lottery, life ann. 4$\mathcal{L}$ 10 for $\mathcal{L}$ 100 in lott.
1746	3.0	100(4%), L(1.5)	5.4	4.81	4.72	3%: 75-83 4%: 91-94	2.5 M subscription, 0.5M lottery, life ann. 9$\mathcal{L}$ for $\mathcal{L}$ 100 in lott.
1747	4.0	110(4%)	4.4	3.73	3.54	3%: 85 4%: 96	plus a 10% premium in bonds (effective rate 4.4 %).
1747	1.0	100(4%)					Lottery
1748	6.3	110(4%)	4.4	3.71	3.51	3%: 80 4%: 90	As the price fell, payment dates were delayed.
1750	1.0	100(3%)				3%: 100	Conversion Navy bills
SUM	20.7						

Source : United Kingdom, Parliamentary Papers (1898), Grellier (1810), (1812).

For definitions of the items and descriptions of the computations, see the text.

- Most of the national debt is at 4%

- Interest rate has decreased to 3%

  - A bond that pays a coupon of 3 per year is priced at 100 (par):
    - $p = c / R$ or $c = Rp$ or 3 = 3% 100.

- If the market expects the debt not to be redeemed, then a bond that pays a coupon of 4 should be valued at 4/3 the price of a 3% bond, therefore 133.33

  - If the bond is redeemable, the government should buy it back at 100.

- The expectation that the bond will be redeemed drives down the price of the bond.

  - Suppose the price of the bond at 4% (with a coupon of 4) is *q and* the price of the bond at 3% is *p.*

Overall view

- Let p be the price of a perpetual annuity (consol) with payment (coupon) c per year

- Long-term interest rate R

- Then: $p = c / R$

During the war, the price of the consol falls : the interest rate rises

Borrowing is high when its cost (the interest rate) is also high

p (price of the 3%)

LOANS (amounts)
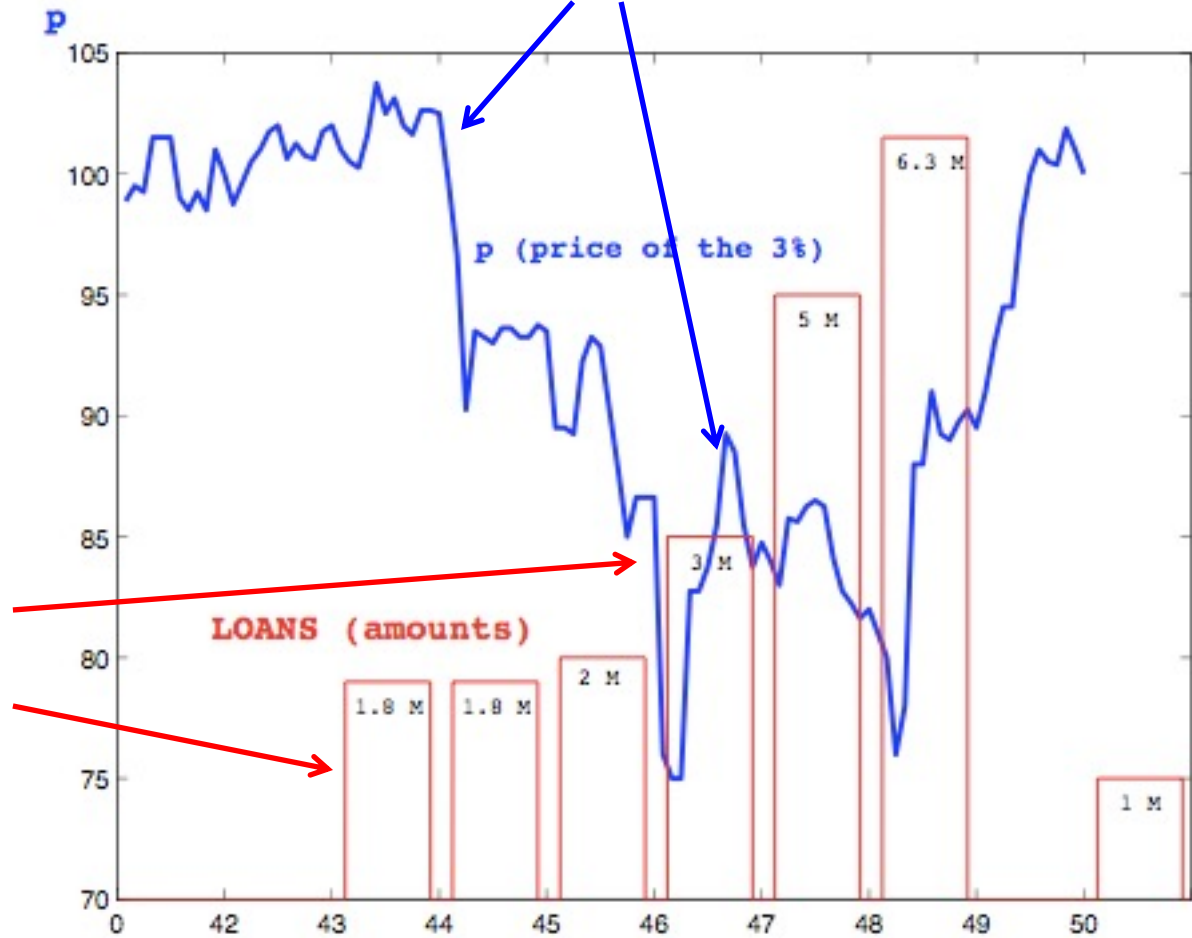
Figure 1: Prices of the 3 % bond (1741 - 1749)

Relative prices of annuities

- Suppose
  - 3% annuity (annuity at face value 100 with a coupon of 3 per year)
    - Not redeemable perpetual (just as an assumption)
    - price p
  - 4% annuity (annuity at face value 100 with a coupon of 4 per year)
    - redeemed when the 3% annuity is a par (and the long-term rate is 3%)
      - The policy of redemption is anticipated by the market
    - price q
- The difference between the two assets is the difference of coupons: 4 – 3 = 1, before the redemption. That contingent annuity is priced by the market (anticipations) at

$$q - p$$

Actual interest reduction of 1749

- Conversion into bonds that provide (about) coupons of

  - 4 in 1750

  - 3.5 for 6 years (non redeemable)

  - 3 afterwards

- Late subscribers (March) received slightly less favorable deal

  - Multiple equilibria in the game

- For those who do not want the exchange, payment through cash

Expectations

- How did the market anticipate the interest reduction
  - If well anticipated, the policy is perhaps less impressive

- Source: prices of the 3 percent and 4 percent bond

- One may assume that the 3 percent is not redeemable (changed into consols in 1753-- the main financial instrument of the public debt in England)

- The 4 percent is redeemable.

- The price difference q - p is the PV of the coupon of 1 per year (actually 0.5 every six months) until the redemption plus the premium at the time of redemption

Course of the Exchange

	Wednesday	Thursday	Friday
BANK-STOCK,———	$105\frac{1}{8}$	$105\frac{3}{8}$	$105\frac{3}{4}$a106
INDIA-STOCK,———	Nothing done	$135\frac{1}{4}$	$135\frac{1}{2}$a$\frac{1}{4}$
SOUTH-SEA ditto———	Nothing done	Nothing done	Nothing done
Ditto ANNUITY,———	$76\frac{7}{8}$a77	77	77a$76\frac{3}{4}$
Ditto NEW,———	Nothing done	75a$\frac{1}{8}$	75a$\frac{1}{8}$
3 per Ct. Bk. reduced.	$75\frac{5}{8}$a$\frac{1}{4}$a$\frac{3}{8}$	$75\frac{5}{8}$a$\frac{3}{4}$	$75\frac{1}{4}$a$\frac{3}{8}$a$\frac{5}{8}$
3 per Ct. ditto consol.	74a$73\frac{7}{8}$	$73\frac{7}{8}$a$\frac{3}{4}$a74	74a$\frac{1}{4}$a74
Ditto————1726	$73\frac{5}{8}$a$\frac{1}{4}$	Nothing done	Nothing done
3 per Ct. Annu. 1751	Nothing done	Nothing done	$74\frac{3}{4}$
Ditto India Ann.———	$74\frac{1}{4}$a$\frac{1}{2}$	Shut	Shut
$3\frac{1}{2}$ Annuities———1756	Nothing done	$78\frac{1}{4}$a$\frac{7}{8}$	Nothing done
$3\frac{1}{2}$ per Cent———1758	$80\frac{5}{8}$	$80\frac{3}{4}$	$80\frac{5}{8}$a$\frac{3}{4}$
4 per Cent———1760	$88\frac{5}{8}$	$88\frac{3}{4}$a$\frac{7}{8}$	$88\frac{7}{8}$a89a$88\frac{3}{4}$
3 per Ct Scrip.——1761	$75\frac{1}{4}$	$75\frac{1}{4}$a$\frac{3}{8}$	$75\frac{3}{8}$
Million-Bank,———	Nothing done	Nothing done	Nothing done
Equivalent,———	Nothing done	Nothing done	Nothing done
Royal Ass. 100 pd. in	Nothing done	Nothing done	Nothing done
Lon. Ass. 12l.10s.pd.in	Nothing done	Nothing done	Nothing done
5perCt.Dantzick Loan	Nothing done	Nothing done	Nothing done
$4\frac{1}{2}$perCt. Hanov. Loan	Nothing done	Nothing done	Nothing done
4 per Ct. India Bonds,	10s a 9s Pr	10s a9s Pr.	10s Pr.
Feb. Navy & Vict. Bills	10	10	10
4 per Cent Excheq. Bills	1s a 2s Dif.	1s Dif.	1s a 2s Dif.
Long Ann. Yrs Purch.	$22\frac{1}{4}$a$\frac{3}{8}$	$22\frac{3}{8}$a$\frac{1}{2}$	$22\frac{1}{2}$a$\frac{5}{8}$
Lottery Tickets———	10l 12s 6d	10l 12s a 6d	10l 12s6d a13s

TABLE 26

The redeemable National Debt, 29 September 1749

No.	Category	At 3% £	At 4% £	Sub-totals £	Totals £
1	*Due to companies corporately*				
	(a) Bank of England	3,200,000	8,486,800	11,686,800	
	(b) East India Company	1,000,000	3,200,000	4,200,000	
	(c) South Sea Company	..	3,662,784	3,662,784	
					19,549,584
2	*Stock managed by companies*				
	(a) Government stock managed by Bank of England	7,200,000	18,402,472	25,602,472	
	(b) South Sea Old Annuities	..	13,651,100	13,651,100	
	(c) South Sea New Annuities	..	9,988,319	9,988,319	
					49,241,891
3	*Managed at the Exchequer*				
	(a) 3½%s (1731)				400,000
	(b) Loans of 1736 and 1739	900,000	..	900,000	
	(c) St. Kitts–Nevis debentures	37,821	..	37,821	
	(d) Loan of 1720 charged on duties on Wrought Plate	..	312,000	312,000	1,249,821
	TOTALS	12,337,821	57,703,475	70,041,296	70,441,296

Source: Tables 22 and 24 (above, pp. 226-28) and BBB (48-9) ...

He convincingly repudiated Lord Egmont's fatuous argument that unless a reduction of interest were kept secret until the last minute the monied interests would sabotage it.[1] He then outlined his proposals. The interest on the debt which carried 4% was to be reduced after a year to 3½%. It was to remain at this rate for seven years, and then to fall to 3%.[2] Pelham had, probably correctly, rejected the sudden reduction to 3% contemplated in 1737, but had at the same time avoided committing the government to a payment of 3½% for more than seven years.[3]

On 29 November 1749 Francis Fane, the chairman of the Committee of the Whole House, reported that it had considered and accepted Pelham's plan.[4] The 4% debt was to be reduced to 3½% from Christmas 1750. At the end of seven years it was to fall to 3%, but during this period was to be irredeemable. On amendment, the capital of the East India Company was exempted from this last provision; this later proved a very useful stick with which to beat the company.[5] The public creditors were given until 28 February 1750 to agree to the government's proposals, but no provision was made at this stage to pay them off if they dissented. The Commons ordered a Bill to embody their resolutions. It was introduced on 4 December 1749, and received the royal assent on 20th. It was, commented a writer, 'hurried through both Houses with the greatest Expedition possible even after two great Companies had shewed a dislike to it'.[6] Parliament's complaisance was perhaps rather due to its social structure, for landed men had a keen interest in reducing the burden of taxes.[7] The public creditors, especially the stockholders of the monied companies, were less docile. It soon became apparent that the conversion would be won or lost in the companies' General Courts, to which the mass of holders of government stock, and the numerous foreign owners, looked for a lead. The

Dickson's account (1967)

TABLE 29

Four per cent debts subscribed by 30 May 1750

Type of debt	Amount £	Subscribed by 28 February 1750 £	Subscribed by 31 May 1750 £	Total subscribed £	Remaining unsubscribed £
1. Due to Bank of England	8,486,800	8,486,800	..	8,486,800	..
2. Due to East India Company	3,200,000	..	3,200,000	3,200,000	..
3. Due to South Sea Company	3,662,784	..	..	..	3,662,784
4. South Sea Old Annuities	13,651,100	9,050,911	3,353,359	12,404,270	1,246,830
5. South Sea New Annuities	9,988,319	6,284,809	2,673,446	8,958,255	1,030,064
6. Govt. 4% stock managed by B. of E.	18,402,472	14,857,956	2,713,618	17,571,574	830,898
7. 4% stock managed by Exchequer	312,000	126,500	3,250	129,750	182,250
TOTALS	£ 57,703,475	38,806,976	11,943,673	50,750,649	6,952,826

Figure 3. Share of National Debt Held by Each Company

■ Bank of England ☐ East India Company ☐ South Sea Company
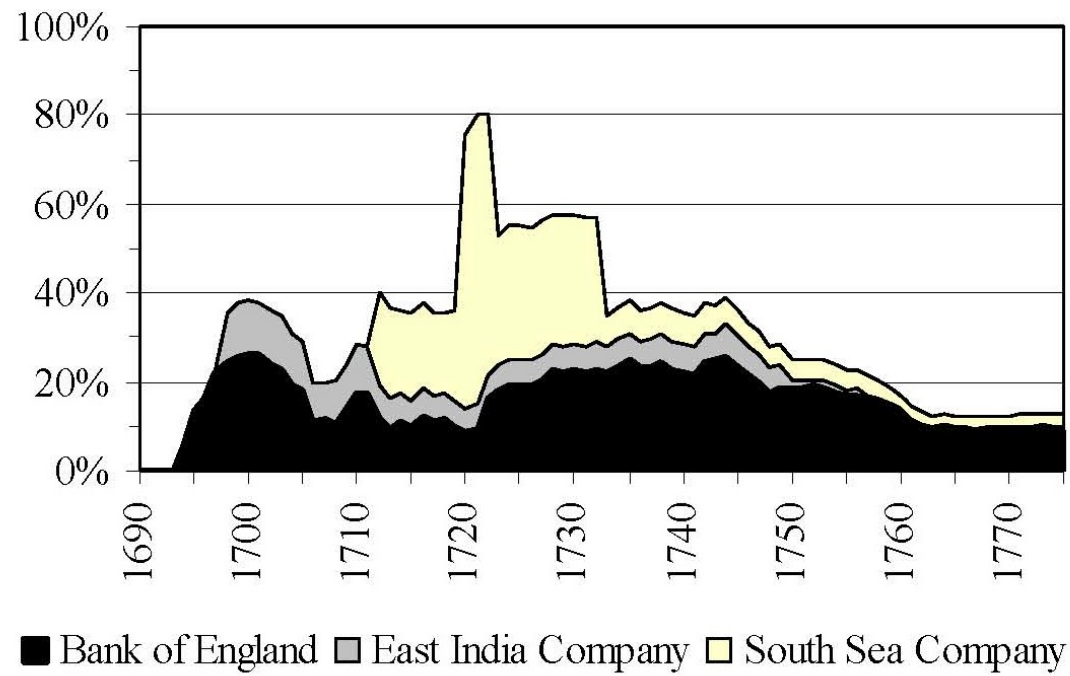
Figure 4. Share of Long-Term Debt Held or Administered by Company
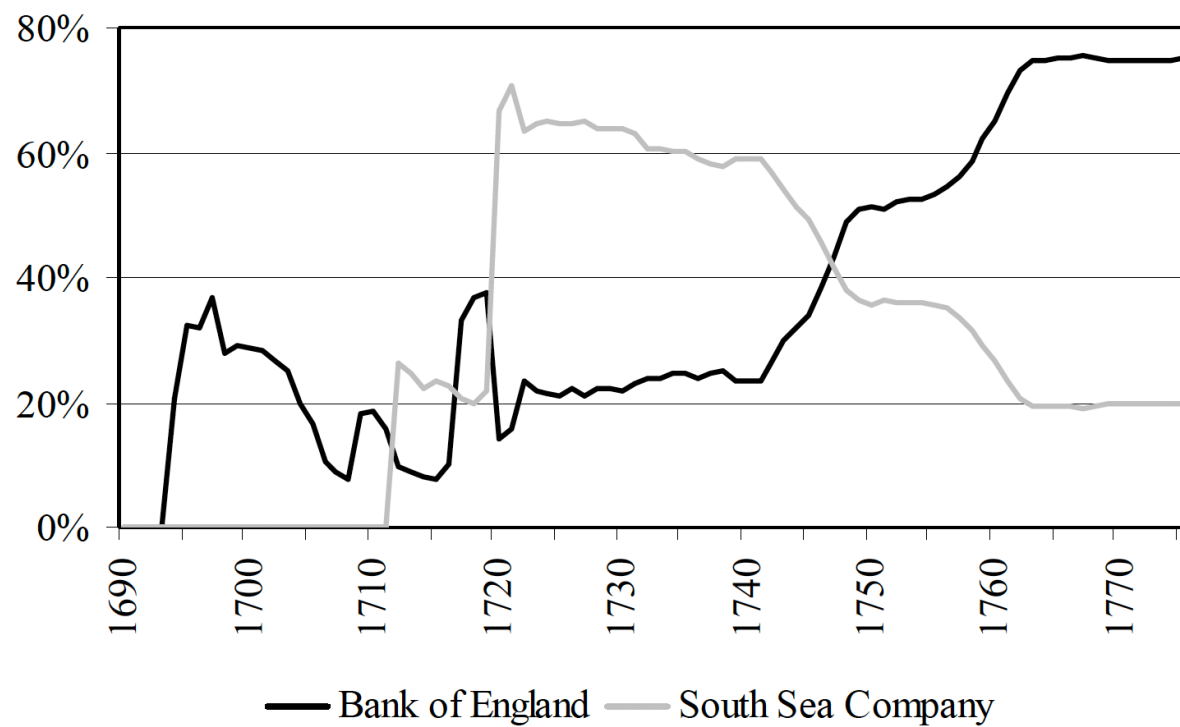
Dickson (in Quinn, 2008)

other Usurers (Sutherland 1946: 27)". The three companies directly held 27 percent of these debts, and either the Bank of England or the South Sea Company administered almost all the rest. The administration of debt provided sufficient coordination to impose an effective credit boycott.

    The Bank of England's defection caused individual creditors to rush to restructure (Dickson 1967: 238). While the Bank of England received no prize for its vote, the East India Company held out for the right to de-securitize as much of its pooled debt as

necessary to retire company bonds that carried a relatively high rate.[47] The South Sea Company held out for the best terms: keeping its rate at 4 percent until 1757. With no privileges to defend and only the threat of redemption to fear, the South Sea Company was singularly focused on minimizing concessions.

The episode shows that a coalition led by a few corporations could reject an offer to restructure debt of a sovereign unwilling to default, and it helps explain why Britain did not gain rate concessions from the companies for three decades. The episode also shows that Britain could get the Bank of England to undermine those coordinated efforts, and that the defection was enough to compel others to compromise.

Prices Consols and Bonds 1746- 1750

- Assumptions
  - 3 percent is perpetual
  - 4 percent is callable
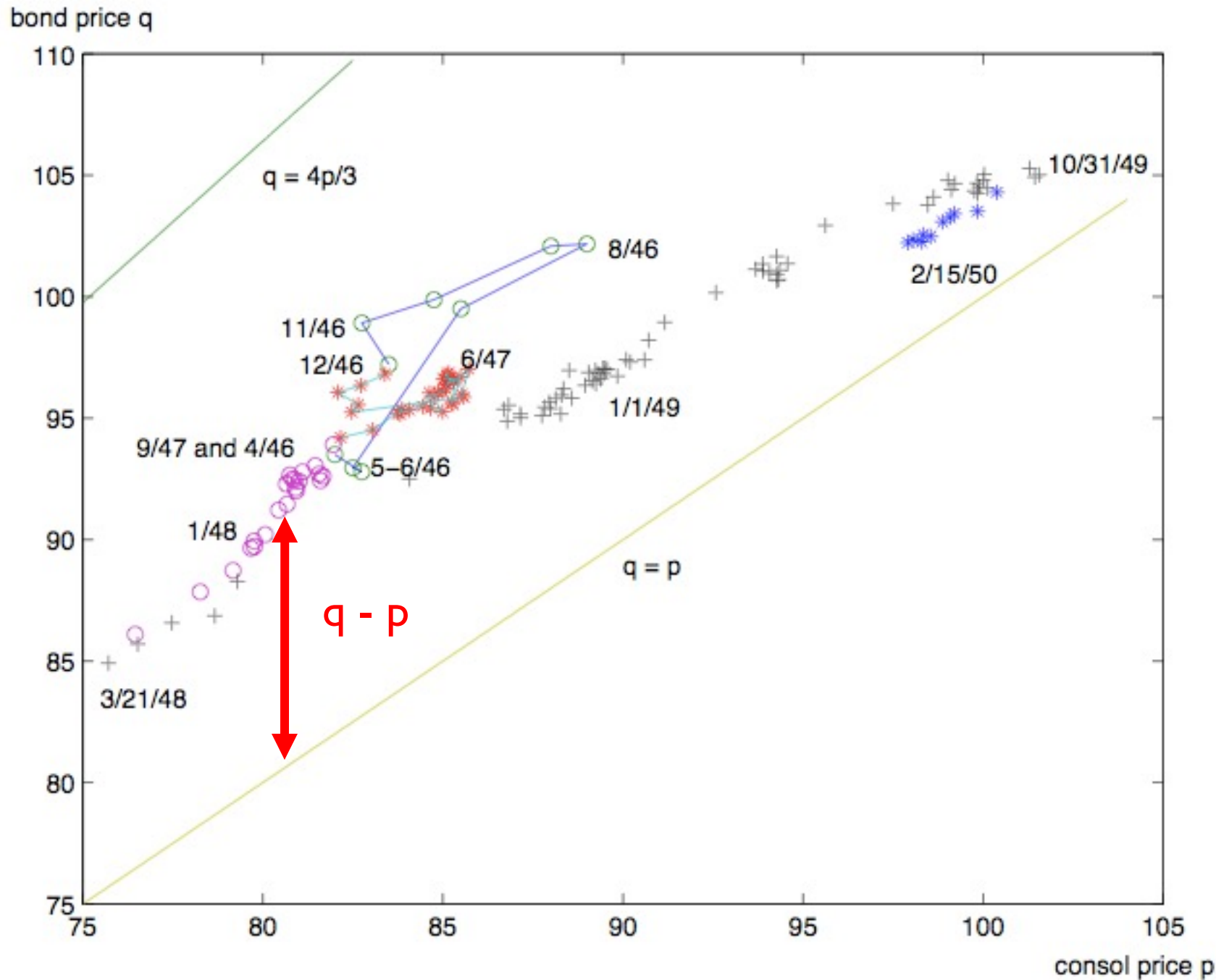
- "consol" pays 3

- "bond" pays 4

  – (redeemable)
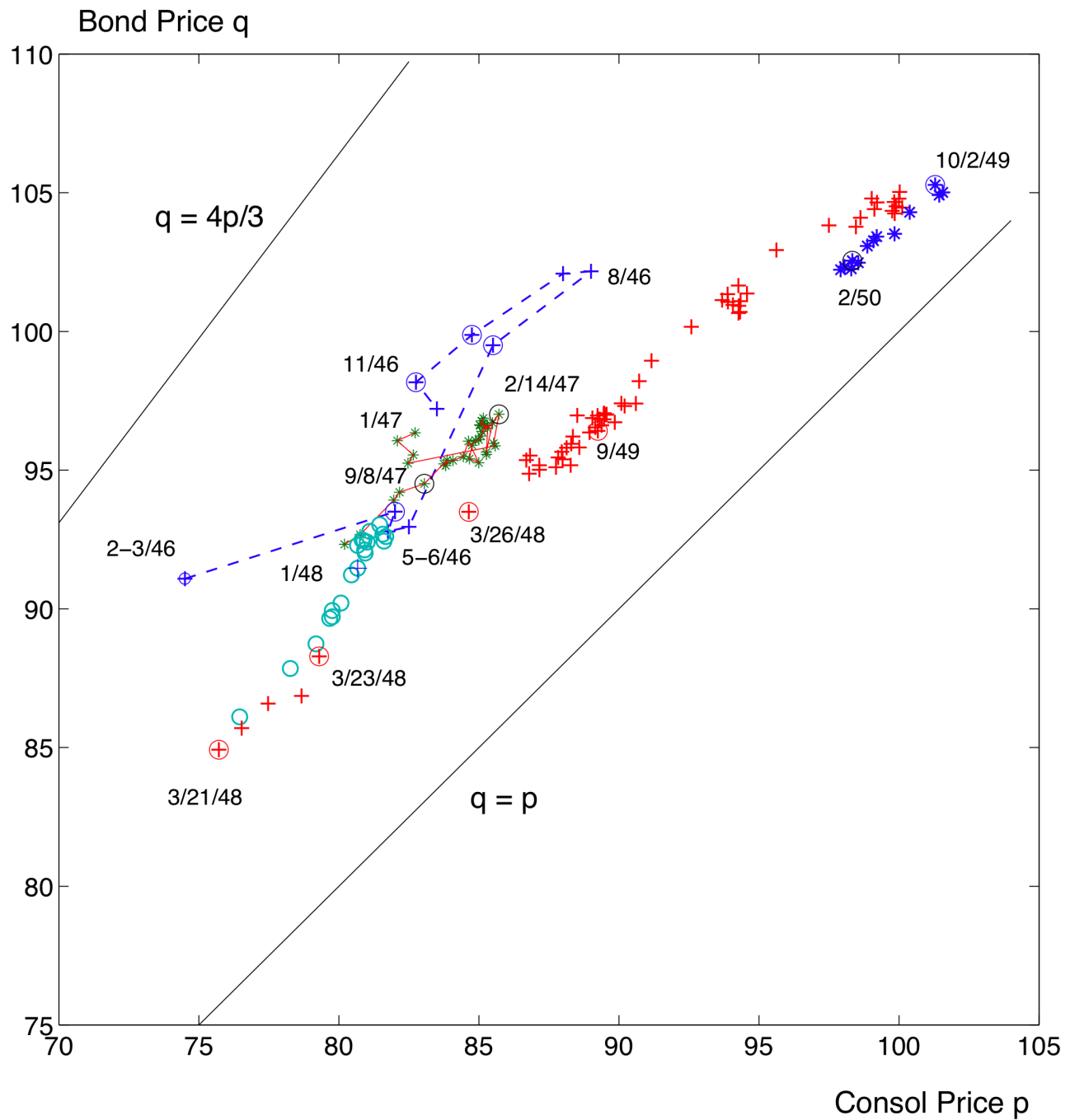
Lower bound for the expected time to reduction

- Assumptions

  - p* price of consol when the bond is redeemed

  - T time to reduction (random variable)

  - δ value of 1 pound, delivered at time T and viewed at time 0.

  - p price of consol; q price of bond.

$$p = aV + \delta p^*, \qquad q = bV + \delta(p^* + h)$$

$$V(p, q) = \frac{qp^* - p(p^* + h)}{bp^* - a(p^* + h)}$$

$$V \le \frac{1}{1 + r^*}\left(\frac{1 - \frac{1}{(1+r^*)^T}}{1 - \frac{1}{1+r^*}}\right) = \frac{1}{r^*}\left(1 - \frac{1}{(1+r^*)^T}\right)$$

$$\frac{1}{(1 + r^*)^T} \le 1 - r^* V$$

$$E\left[e^{-T Log(1+r^*)}\right] \le 1 - r^* V.$$

$$E[T] \ge \bar{T}(V) = -\frac{Log(1 - r^* V)}{Log(1 + r^*)}.$$

Lower bound for the expected time to int. reduction

- People were "too pessimistic"
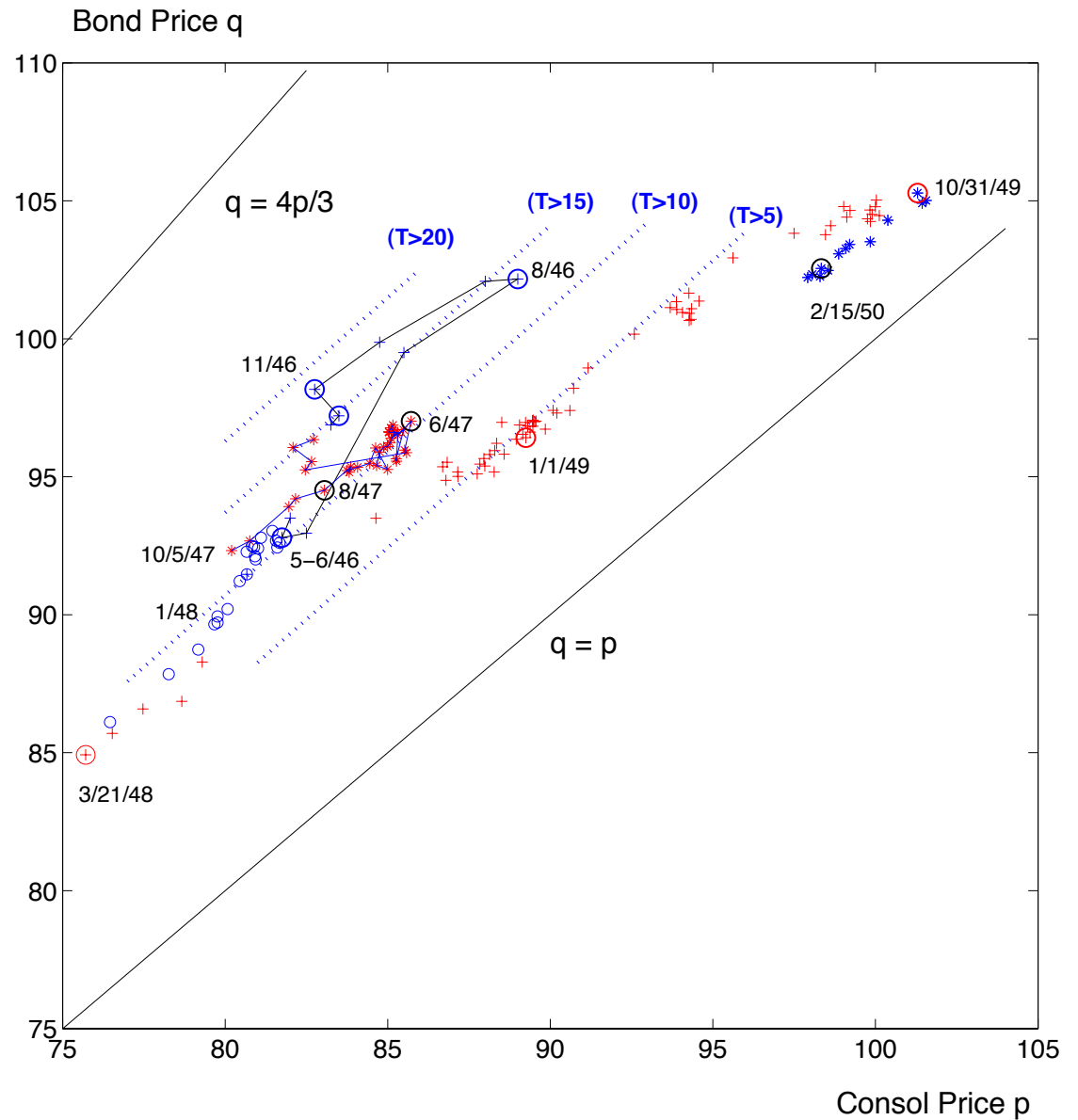
The dotted lines represent points with equal lower-bound expected time to redemption under the rules used in 1749 (in years), with an interest rate not smaller than 3% before the redemption.

Figure 3: Minimum expected time to redemption

Older annuities: different expectations

- People were too pessimistic:

- Expected a long time before the interest reduction

4% Annuities (So. Sea and 1746)
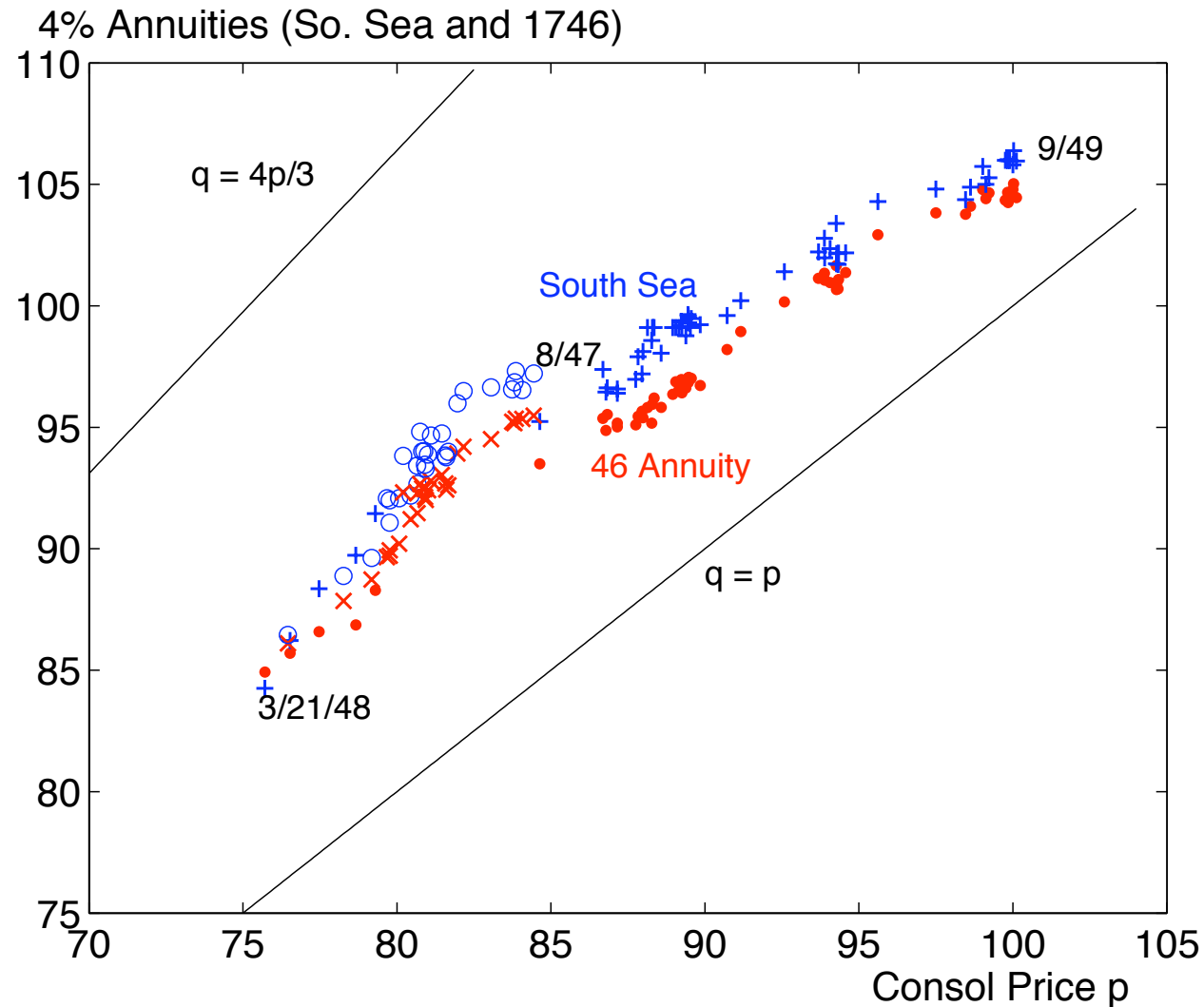
The 1746 annuity is represented by diagonal crosses before March 1748 afterwards. The South Sea annuity is presented by stars before March vertical crosses afterwards.
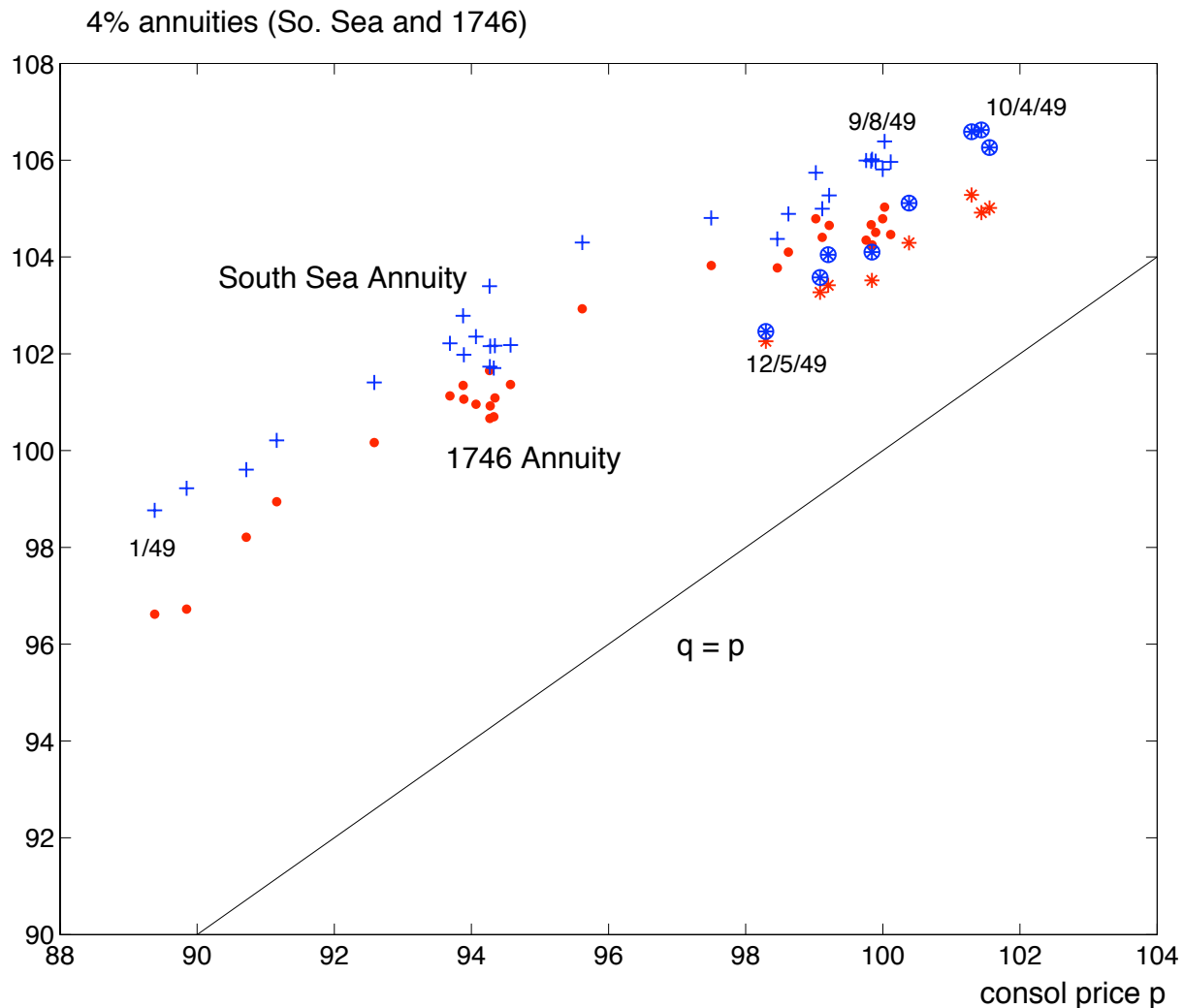
The South Sea annuity (SSA) is represented by crosses between January and September in the final year of 1749. After September, the 1746 annuity (at 4%) is equal to the consol plus a premium (stars), while the evolution of the SSA is gradual and completed only in December (circled stars).

Figure 6: The South Sea Annuities